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<b>(21) International Application Number:</b> PCT/EP94/03432 <b>(22) International Filing Date:</b> 17 October 1994 (17.10.94)  <b>(30) Priority Data:</b> 9303481-7                      22 October 1993 (22.10.93)                      SE  <b>(71) Applicant (for all designated States except US):</b> BEROL NOBEL AB [SE/SE]; S-444 85 Stenungsund (SE).  <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> PERSSON, Lars [SE/SE]; Sara Moraeas väg 104, S-122 34 Enskededalen (SE). POOL, Hazel [GB/GB]; HPA, Suite 4.5 Litchurch Plaza, Litchurch Lane, Derby DE2 8AA (GB).  <b>(74) Agent:</b> ANDERSSON, Rolf; Akzo Nobel Surface Chemistry AB, S-444 85 Stenungsund (SE).		<b>(81) Designated States:</b> FI, JP, NO, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i>
<b>(54) Title:</b> A PERSONAL CARE COMPOSITION  <b>(57) Abstract</b>  The invention relates to a personal care composition in liquid or gel form for use as a shower product. The composition which contains two amphoteric compounds with hydrocarbon groups of different sizes, an ethoxylated amide and a water-soluble anionic surfactant, imparts an excellent mild and silky feel to the skin.		

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**A PERSONAL CARE COMPOSITION**

The present invention relates to a personal care composition in liquid or gel form suitable for use as a shower product. The composition of the invention imparts an excellent skin feel.

It is desired that personal care products, like shower creams and shower gels, besides a cleaning effect, also provide a mild and silky feel to the skin both at the time of application and after the use. The products shall also provide a foam of high volume and good texture to facilitate the application of the product on the skin e.g. by a sponge.

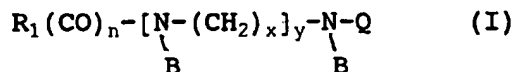
In the prior art a number of a personal care products is known. For examples, in EP-A1-523 127 and EP-A1-417 501, cleaning products for personal care are disclosed, that contain an anionic surfactant and a betaine. However, the betaines may cause irritation in the eyes and have a low contribution to a mild silky skin feel. A skin cleaning mousse-forming product is also described in EP-B1-194 097. The product contains a nonsoap surfactant such as a sulfonate, a sulfate or a betaine, and a moisturizer. In order to obtain an acceptable skin feel a specific skin feel aid is added.

One object of the present invention is to provide a mild personal care product with a smooth and silky feel at the time of application as well as after the use. Furthermore the level of foam volume shall be high. Another object is to obtain acceptable skin feel and foaming properties without the need of using amphoteric quarternized ammonium compounds, like betaines, and skin feel aids.

According to the present invention it has been found that these objects may be met by a personal care composition comprising

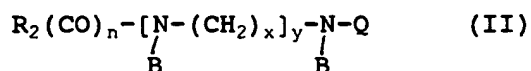
a) a combination of amphoteric compounds containing

- i) at least one amphoteric compound, which has the formula



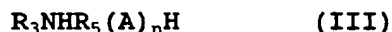
wherein  $R_1$  is a hydrocarbon group of from 15 to 22 carbon atoms,  $n$  is 0 or 1,  $x$  is 2 or 3,  $y$  is an integer of 0 to 4,  $Q$  is  $CH_2COOM$  or  $CH_2CH_2COOM$ , wherein  $M$  is hydrogen or an ion from the groups of alkali metals, ammonium or substituted ammonium and  $B$  is hydrogen, an hydroxyalkyl group with 2-3 carbon atoms or a group  $Q$  as defined;

- ii) at least one amphoteric compound, which has the formula



wherein  $R_2$  is a hydrocarbon group of from 7 to 14 carbon atoms, and  $n$ ,  $x$ ,  $y$ ,  $Q$  and  $B$  have the same meanings as in formula (I), the weight ratio between the amphoteric compounds with formula (I) and the amphoteric compounds with formula (II) being 1:3-6:1,

- b) at least one alkoxylated amide, which has the formula



wherein  $R_3$  is an acyl group with 15-22 carbon atoms,  $R_5$  is an alkylene oxy group with 2-4 carbon atoms,  $A$  is an alkyleneoxy group with 2-3 carbon atoms and  $n$  is a number from 0 to 6, or at least one alkoxylated amide, which has the formula



wherein  $R_4$  is an acyl group with 7-14 carbon atoms and  $R_5$ ,  $A$  and  $n$  have the same meanings as in formula (III), or a combination thereof, and

- c) a water soluble anionic surface active agent, the amounts of component a), b) and c) being 5-50%, 5-40% and 45-90%, based on the total weight of a), b) and c) respectively, and the total amount of a), b) and c) being 1-100%

based on the total weight of the composition. Preferably, the component a) is 10-35%, component b) 10-25% and component c) 50-80% by weight based on the total amount of a), b) and c). The weight ratio between component a) and component c) is suitably from 2:3 to 1:8 and the weight ratio between component b) and component c) is from 1:2 to 1:8. In a preferred embodiment the composition contain at least one alkoxyated amide with the formula (III) and at least one alkoxyated amide with the formula (IV), the weight ratio between the compounds with formula III and the compounds with formula (IV) being from 1:6 to 6:1. By combining the compounds of the present composition in the specified amount stated above, it is possible to obtain synergistic properties which make the composition extremely suitable to be used in personal care products, such as shower gels and shower creams.

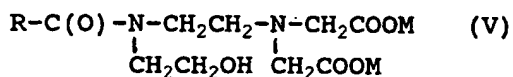
A blend of these surfactants enables the manufacture of shower products with outstanding performance, especially with regard to after-use skin feel. It is the surfactants alone which are responsible for the skin feel and there is no need to add polymeric material or other emollients in order to achieve an exceptional after-use feel.

Besides the anionic surfactant, the amphoteric compounds with the formulae (I) and (II) also contribute to the cleaning effect of the composition. In addition, the compounds with formula (I) promote the feel of foam and the after-use feel, while compounds with formula (II) generally promote foaming. The alkoxyated amides of formula (IV) increases the volume of foam, while the compounds of formula (III) have a thickening effect in combination with an improved after-use feel and a creamy texture of the foam. Furthermore, any expected toxic effects or skin irritaitons due to the presence of the anionic surfactant are essentially lowered depending on the substantial

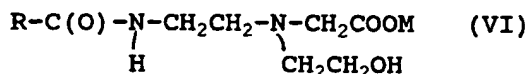
amounts of amphoteric compounds and alkoxyated amides in the composition.

In the formulae (I) and (II),  $R_1$  and  $R_2$  are preferably aliphatic groups,  $R_1$  containing 16-20, mainly 18 carbon atoms and  $R_2$  10-14, mainly 12 carbon atoms. The groups  $R_1$  and  $R_2$  can be both unsaturated and saturated and suitably they are derived from rapeseed oil and coconut oil.

One class of preferred ampholytic compounds with formulae (I) and (II) are those where  $x$  is 3,  $n$  is 0,  $y$  is 2-3 and  $B$  is the group  $Q$ . Another class of suitable amphoteric compounds with formulae (I) and (II) are those where  $n$  is 1, and each  $B$  independently of each other hydrogen, a hydroxyalkyl group with 2-3 carbon atoms or the  $Q$  group with the proviso that at least one of the  $B$  groups is the hydroxyalkyl group. Examples of such compounds are those with the formulae

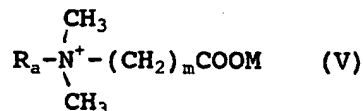


and



where  $M$  has the same meaning as mentioned above and  $R$  is  $R_1$  or  $R_2$ , where  $R_1$  and  $R_2$  have the same meanings as mentioned above.

In addition to the amphoteric surfactants of formulae (I) and (II) the composition may also contain other types of amphoteric compounds as well as zwitterionic compounds like betaines. Examples of suitable zwitterionic compounds are those with the formula



wherein  $R_a$  is a hydrocarbyl chain of 7-21 carbon atoms and preferably is an alkyl or alkenyl radical of from 11 to 17 carbon atoms;  $m$  is 1 or 2;  $M$  is preferably H or sodium ion.

Preferred alkoxyated amides with the formulae (III) and (IV) are those, where n is a number from 0 to 4, most preferably from 2-3, and R<sub>3</sub> is an acyl group with 16-20, mainly 18 carbon atoms and R<sub>4</sub> is an acyl group with 10-14, mainly 12 carbon atoms. Preferably at least 50 % of all A groups are the ethyleneoxy group, and most preferably both R<sub>5</sub> and A are ethyleneoxy groups. The R<sub>3</sub> and R<sub>4</sub> groups are suitably derived from rapeseed oil and coconut oil.

Anionic surfactants suitable for inclusion in the compositions are those generally used in personal care products and include alkylsulfates, ethoxylated alkyl sulfates, alkyl polyglucoside sulfates, fatty acid polyglyceride sulfates, fatty acylamido polyoxyethylene sulfate, alkyl glyceryl ether sulfonates, methyl acyl taurates, fatty acyl glycinate, N-acyl glutamates, acyl isethionates, alkyl sulfosuccinates, alpha-sulfonated fatty acids, their salts and/or their esters, alkyl phosphate esters, ethoxylated alkyl phosphate esters, acyl sarcosinates and fatty acid/protein condensates, and mixtures thereof. The alkyl and/or acyl groups for these surfactants contain 8-22, preferably 10-18 carbon atoms.

Preferred from the viewpoint of optimum characteristics for shower products are the sulfate compounds, especially the salts of sulfuric acid esters of the reaction product of 1 mole of a higher fatty alcohol with 10-18 carbon atoms and from about 1 to about 5 moles of ethylene oxide, with sodium, ammonium or magnesium being the preferred counterions. Particularly preferred are the alkyl ether sulfates containing from about 2 to 4 moles of ethylene oxide, such as sodium lauryl dioxyethylene sulfate, sodium lauryl trioxyethylene sulfate.

In addition to the above components the composition of the invention may also contain normally used components, such as preservatives, pearlescent agents, opacifiers, colourants and fragrance. Preservatives may e.g. include Euxyl K 100

(Schülke and Mayr), benzyl alcohol, metylchloroisothiazolinone and methylisothiazolinone. The pearlescent agent may e.g. be Empicol XP40 (Albright & Wilson). Opacifiers may suitably be polymeric substances, such as copolymers of vinyl pyrrolidone and styrene. The colourants may e.g. include FDC Yellow and FDC Orange 4.

The pH of the composition should be within a range of 4.5 to 7.0, and preferably 5.5. A pH adjusting agent can be used, such as an organic acid, e.g. citric or lactic acid, or an inorganic acid, e.g. hydrochloric acid.

The invention is further illustrated by means of the following examples.

#### Example 1

A number of compositions were prepared from an anionic surfactant, amphoteric surfactants and amide etoxylates. The compounds used are as set forth in the following table.



Table 1

Compound nr	Chemical structure
A	Formula I, where $R_1$ is a $C_{16-18}$ aliphatic group, x and y is 3, n is 0, and B and Q are $C_2H_4COONa$
B	Formula II, where $R_2$ is a $C_{12-14}$ aliphatic group, x is 3, y is 2, n is 0, and B and Q are $C_2H_4COONa$
C	Formula III, where $R_3$ is a $C_{16-18}$ aliphatic group; $R_5=A=C_2H_4O$ ; and $n=2$
D	Formula IV, where $R_4$ is an $C_{12-14}$ aliphatic group; $R_5=A=C_2H_4O$ ; and $n=2$
E	Lauryl di(oxyethylene)sulphate

By using these surfactant A-E the following compositions were formulated.

Table 2

Formulation	Ingredient	% by weight
1	B	3
	C	2
	E	15
2	A	3
	C	2
	E	15
3	A	1.5
	B	1.5
	C	2
	E	15
4	B	3
	D	4
	E	15
5	A	3
	D	3
	E	15
6	A	1.5
	B	1.5
	D	3
	E	15
7	A	1.5
	B	1.5
	C	2
	D	3
	E	15

The seven formulations were evaluated with regard to volume of foam, feel of foam on application and the after-use feel of skin. These parameters were in accordance with scales from 0 to 100 having the following meanings.

## Volume of foam

0 = None

100 = Copious

## Feel of foam

0 = Unacceptable

100 = Extremely rich

## After-use feel

0 = Unacceptable

100 = Excellent

The assessments were carried out on the forearms, which were prewashed with mild Palmolive soap, and wetted with warm water, before applying the test formulations.

A quantity of 0.5 g of the formulations was transferred to the arm, and the arm was then rubbed five times initially, and then up to a further twenty times. Each time the volume of foam and the feel of the foam on the skin were recorded.

The arms were then rinsed with warm water and dried using a clean towel. The after-feel was recorded after five minutes. The following results were obtained.

Formulation	Foam Volume	Feel of foam	After-use feel
1	67.5	67.5	82.5
2	67.5	67.5	82.5
3	70	72.5	82.5
4	67.5	67.5	72.5
5	70	72.5	77.5
6	75	72.5	77.5
7	75	72.5	85

From the results it is evident that formulation 3, 6 and 7 in accordance with the invention exhibits advantageous and synergistic effects in comparison with the formulations 1, 2, 4 and 5.

**Example 2**

A shower cream composition based on formulation 7 was compared with three shower products on the commercial market

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with regard to the volume of foam, feel of foam and after-use feel.

The composition of the shower cream was as follows.

Components	% by weight
A	1.5
B	1.5
C	2.0
D	3.0
E	15
Vinyl pyrrolidone/styren copolymer (Antara 430)	1.5
Propylenglycol	2.0
Preservative (Euxyl K 100)	0.1
Perfume (Frequent K/25952)	0.3
Water	up to 100 %

The pH-value of the shower cream was adjusted to 5.3 by adding citric acid. After this addition the shower cream had an viscosity of 16 000 cps.

The following results were obtained.

Product	Foam Volume	Feel of foam	After-use feel
Shower cream of the invention	75	72.5	85
Comparison 1	75	70	82.5
Comparison 2	70	70	67.5
Comparison 3	75	75	80

From the results it is evident that the shower cream product in accordance with the invention gives an exceptional after-use feel without the need of vegetable oils or synthetic emollient materials.

**Example 3**

The following formulations were prepared.

Components	Formulation, % by weight		
	8	9	10
A	-	1.5	1.5
A'	1.5	-	-
B	1.5	1.5	-
B'	-	-	1.5
C	2.0	-	2.0
C'	-	2.0	-
D	3.0	-	3.0
D'	-	3.0	-
E	15.0	15.0	15.0

A' = Formula (I), where  $R_1(\text{CO})_n = \text{C}_{16-18}$  acyl group;  $x=2$ ;  $y=3$ ;

B=Q=CH<sub>2</sub>COONa

B' = Mixture of Formula (V) and (VII), where  $R(\text{CO}) = \text{C}_{12-14}$  acyl

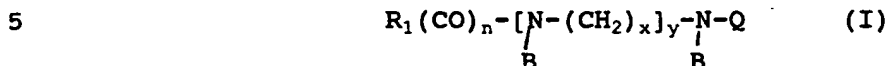
C' = Formula (III), where  $R_3 = \text{C}_{16-18}$  aliphatic group;  $R_5 = \text{C}_2\text{H}_4\text{O}$ ;  
A=C<sub>2</sub>H<sub>4</sub>O; and  $n=3$

D' = Formula (III), where  $R_3 = \text{C}_{12-14}$  aliphatic group;  $R_5 = \text{C}_2\text{H}_4\text{O}$ ;  
and  $n=0$

Compounds A, B, C, D and E were the same as in Example 1. The formulations 8, 9 and 10 were then tested in the same manner as in Example 1. The same results as for formulation 7 in Example 1 were obtained, but with the exception that Feel of Foam for formulations 8 and 9 was 75. The formulation 9 had also a slightly higher viscosity than formulations 7, 8 and 10.

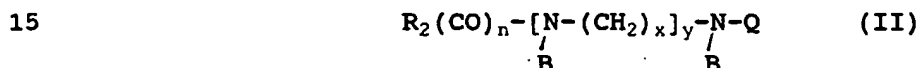
## CLAIMS

1. A personal care composition comprising
- a) a combination of amphoteric compounds containing
- i) at least one amphoteric compound, which has the formula



wherein  $R_1$  is a hydrocarbon group of from 15 to 22 carbon atoms,  $n$  is 0 or 1,  $x$  is 2 or 3,  $y$  is an integer of 0 to 4,  $Q$  is  $CH_2COOM$  or  $CH_2CH_2COOM$ , wherein  $M$  is hydrogen or an ion from the groups of alkali metals, ammonium or substituted ammonium and  $B$  is hydrogen, an hydroxyalkyl group with 2-3 carbon atoms or a group  $Q$  as defined;

- ii) at least one amphoteric compound, which has the formula



wherein  $R_2$  is a hydrocarbon group of from 7 to 14 carbon atoms, and  $n$ ,  $x$ ,  $y$ ,  $Q$  and  $B$  have the same meanings as in formula (I), the weight ratio between the amphoteric compounds with formula (I) and the amphoteric compounds with formula (II) being 1:3-6:1,

- b) at least one alkoxylated amide, which has the formula



wherein  $R_3$  is an acyl group with 15-22 carbon atoms,  $R_5$  is an alkylene oxy group with 2-4 carbon atoms,  $A$  is an alkyleneoxy group with 2-3 carbon atoms and  $n$  is a number from 0 to 6, or at least one alkoxylated amide, which has the formula



wherein  $R_4$  is an acyl group with 7-14 carbon atoms and  $R_5$ ,  $A$  and  $n$  have the same meanings as in formula (III), or a combination thereof, and

c) a water soluble anionic surface active agent,  
the amounts of component a), b) and c) being 5-50%, 5-40% and  
45-90%, based on the total amount of a), b) and c) respec-  
tively, and the total amount of a), b) and c) being 1-100%  
5 based on the total amount of the composition.

2. A composition in accordance with claim 1, characterized  
in that in formulae (I) and (II)  $R_1$  is an aliphatic group with  
16-20 carbon atoms and  $R_2$  is an aliphatic group with 10-14  
carbon atoms.

10 3. A composition in accordance with claim 2, characterized  
in that n is 1.

4. A composition in accordance with claim 1 or 2,  
characterized in that x is 3, n is 0 and B is the group Q.

15 5. A composition in accordance with any one of claims 1-4,  
characterized in that it contains at least one compound with  
the formula (III) and at least one compound with the formula  
(IV) in a weight ratio of 1:6 to 6:1.

20 6. A composition in accordance with any one of claims 1-5,  
characterized in that in formulae (III) and (IV)  $R_3$  is an ali-  
phatic group with 16-20 carbon atoms and  $R_4$  is an aliphatic  
group with 10-14 carbon atoms.

7. A composition in accordance with claim 6, characterized  
in that  $R_5$  and A are ethyleneoxy groups.

25 8. A composition in accordance with any one of claims 1-7,  
characterized in that the anionic surfactant is a sulphate or  
sulphonate.

9. A composition in accordance with claim 8, characterized  
in that the anionic surfactant is a salt of sulfuric ester of  
the reaction product of 1 mole of a fatty alcohol and from 1 to  
30 5 moles of ethylene oxide.

10. A composition in accordance with any one of claims 1-9, characterized in that the component a) is 10-35 %, component b) 10-25 %, and component c) 50-80 %, based on the total weight of components a), b), and c).

5 11. Use of a composition in accordance with any one of claims 1-10 in the formulation of a shower product.



## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 94/03432

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 A61K7/50

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO,A,92 04882 (THE PROCTER & GAMBLE COMPANY) 2 April 1992 see the whole document ---	1-11
A	EP,A,0 127 580 (CIBA-GEIGY AG) 5 December 1984 see the whole document ---	1-11
A	EP,A,0 160 507 (E. G. FISHLOCK-LOMAX) 6 November 1985 see the whole document -----	1-11

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

20 January 1995

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31.01.95

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**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International Application No  
**PCT/EP 94/03432**

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO-A-9204882	02-04-92	AU-A-	8730291	15-04-92
		CN-A-	1060782	06-05-92
		CZ-A-	9300453	16-02-94
		EP-A-	0548265	30-06-93
		HU-A-	64206	28-12-93
		JP-T-	6501011	27-01-94
-----				
EP-A-0127580	05-12-84	JP-A-	59227994	21-12-84
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EP-A-0160507	06-11-85	AU-B-	581431	23-02-89
		AU-A-	4169085	31-10-85
		CA-A-	1261275	26-09-89
		US-A-	4946136	07-08-90
-----				